

Serial No. 10/724,299
Reply to Office Action of February 22, 2006

REMARKS/ARGUMENTS

Prior to this Amendment, claims 1-6 were pending in the application.

Claims 16-20 are added. No new matter is added with support found in the originally filed claims, in paragraph [0031], and at least in Figures 4 and 13 of Applicant's specification.

After entry of the Amendment, claims 1-6 and 16-20 remain for consideration by the Examiner.

Claim Rejections Under 35 U.S.C. §102

In the Office Action, claim 1-4 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. Appl. Publ. No. 2002/0050397 ("Sakamoto"). This rejection is traversed based on the following remarks.

Sakamoto does not teach or discuss alignment of electrical components on a printed circuit board. Instead, Sakamoto discusses a method for better controlling the temperature of a semiconductor module on a flexible sheet of a disk drive. This is a very different problem than that addressed by Applicant, and Sakamoto does not discuss accurate aligning but teaches instead enhanced heat dissipation. To this end, Sakamoto shows in Figures 1A, 1B, 2A, 2B, and 2C a flexible sheet 11 made up of two insulating sheets P1 and P2 between which pad electrodes PD are sandwiched. A first opening OP is cut in the sheet P2 to expose the pads PD and a hole 13 is cut through both sheets P1 and P2. A semiconductor module 10 is mounted on the flexible sheet 11 with a portion contacting the pads PD and a portion extending through the hole 13 to mate with a radiation substrate 13A.

Turning to the language of claim 1, a disk drive printed circuit board is claimed that includes a board body and a mounting surface disposed on the board body. Sakamoto teaches mounting on a flexible sheet 11 and not a board body of a printed circuit board (e.g., the Office Action does not assert that alignment line indicators are shown on the printed circuit board 112 of Figure 25 but instead on

Serial No. 10/724,299
Reply to Office Action of February 22, 2006

flexible sheet 111). For this reason alone, claim 1 is not anticipated by Sakamoto, and the rejection should be withdrawn.

Further, claim 1 calls "component-dedicated alignment indicators" disposed on the mounting surface. Sakamoto fails to teach any indicators visibly disposed on a mounting surface. The Office Action cites Sakamoto in Fig. 1 and its "circuit board 11" as showing these indicators for use with component 10. However, as seen in Figures 1A, 1B and 2A, Sakamoto teaches a flexible sheet 11 that includes no visible indicators on its surface for aligning component 10. Instead, Sakamoto teaches that an opening OP is cut through its insulating sheet P2 and another opening 13 is cut through another insulating sheet P1. There are no alignment lines provided on the surface of sheet P2 but instead in Figure 1 it is shown that the component 10 is mounted to the surface of sheet P2 exterior to opening OP (e.g., see dashed lines indicating where component 10 would be mounted on the surface of sheet P2). As can be seen clearly in Figure 1A, there are no visible alignment line indicators provided on flexible sheet 11. For this additional reason, claim 1 is believed allowable over Sakamoto.

Yet further, claim 1 specifically calls for first, second, third, and fourth line segments in the line indicators on the mounting surface of the board, with the distance between opposing pairs of the lines being based on the electrical component. These four lines are not shown on the surface of 11 (i.e., on either the sheet P1 or sheet P2). The Office Action provides a "Fig. 1" that is a marked up version of Sakamoto's Figure 2A. Applicant disagrees with the Office Action's construction of Sakamoto's Figure 2A provided in the Office Action's Fig. 1. Specifically, the Office Action's Fig. 1 is labeled such that apparently the four inner lines are shown by a rectangle that has "first inner spacing" and "second inner line spacing." However, it appears that this rectangle coincides with the dashed lines in Sakamoto's Figure 2A that show the radiation substrate 13A. The radiation substrate 13A is shown in dashed lines in Figure 2A because it is hidden from view

Serial No. 10/724,299
Reply to Office Action of February 22, 2006

and is not provided on the surface of flexible sheet 11. There are no lines "visibly disposed" on the mounting surface of flexible sheet 11 that can be said to teach the four inner line segments called for in claim 1. For this additional reason, Sakamoto fails to anticipate the printed circuit board of claim 1.

Still further, claim 1 calls for the visibly disposed line indicators to include "first and second outer line segments" disposed parallel to the first and second inner line segments, with the first and second inner line segments between the first and second outer line segments. The Office Action asserts that these outer line segments are shown by Sakamoto on the surface of flexible sheet 11. The outer lines are said to be shown by elements in the Office Action's Fig. 1 as labeled "First outer line segment" and "Second outer line segment." However, the feature pointed to is the edge of sheet 11 or insulating sheet P2. The edges of sheet 11 do not read on the claimed outer line segments that are visibly disposed on the mounting surface of the board body. Claim 1 requires that line segments be provided that are visibly disposed on a mounting surface of a board and physical edges of a board do not teach such line segments. For this additional reason, Sakamoto fails to teach or suggest all the limitations of claim 1, and Applicant requests that the rejection of claim 1 based on this reference be withdrawn.

Claims 2-4 depend from claim 1 and are believed allowable over Sakamoto at least for the reasons provided for allowing claim 1. Claim 3 calls for the line indicators to include a third outer line segment. The Office Action indicates that this third line segment is shown by another physical edge of the flexible sheet 11. As discussed above, a visibly disposed line segment is not shown by an edge for at least the reason that an edge of a surface or sheet is not on the mounting surface of sheet. For this additional reason, claim 3 is not anticipated by Sakamoto.

Claim Rejections Under 35 U.S.C. §103

Additionally, in the Office Action, claims 5 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sakamoto in view of U.S. Pat. No.

Serial No. 10/724,299
Reply to Office Action of February 22, 2006

6,798,609 ("Bonin"). Sakamoto is described as failing to show the component-dedicated alignment line indicators that include fourth outer line segments with the characteristics called for in claims 5 and 6, and Bonin is cited as overcoming these deficiencies in the base reference. This rejection is traversed based on the following remarks.

Claims 5 and 6 depend from claim 1 and, as a result, the reasons provided for allowing claim 1 over Sakamoto apply equally to claims 5 and 6. Bonin fails to overcome the deficiencies of Sakamoto discussed with reference to claims 1 and 3 above. Specifically, Bonin fails to show any visibly disposed indicator lines on its mounting surfaces. The Office Action cites Bonin with reference to Figure 3 and the beams 33 and 35, but there is no discussion in Bonin regarding providing four inner indicator lines having a particular spacing and then providing two outer line segments. Hence, the combined teaching of Sakamoto and Bonin would not provide the circuit board of claim 1. Claim 5 calls for third and fourth outer line segments and neither Sakamoto nor Bonin provide such teaching. For these reasons, Sakamoto in view of Bonin fails to teach or suggest the boards of claims 5 and 6.

Conclusions

In view of all of the above, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

No fee is believed due for this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,

5/12/06



Kent A. Lembke, Reg. No. 44,866
Hogan & Hartson LLP
(720) 406-5378 Tel
(720) 406-5301 Fax